

Infectious Diseases

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SMITHSONIAN INSTITUTION

DAVID J. SENCER

CDC MUSEUM

History • Legacy • Innovation

Read these cards to learn more about infectious diseases of public health importance.



Cards with this symbol are viruses. Viruses are tiny organisms that multiply within cells and cause disease. They need a host for energy or to reproduce.



Cards with this symbol are bacteria. Bacteria are classified as prokaryotes, and do not have a nucleus. They are alive and the DNA is usually in one long strand or loop.



Cards with this symbol are protozoa, fungi, or helminths (worms). Protozoa are single-celled organisms. Fungi can be single-celled or multicellular. Helminths are multi-celled worms.

How to play: These cards are multifaceted. You can match the cards of the same pathogen to play a game of memory, use them as flashcards to study, or just collect them.

ZIKA



Pathogen:
Zika virus

Symptoms:

Most people infected with Zika virus won't have symptoms or will only have mild symptoms. Common symptoms include fever, rash, headache, joint pain, red eyes, and muscle pain. Zika infection during pregnancy can cause serious birth defects in unborn children.

ZIKA



Prevention:

Zika virus is spread mostly by the bite of an infected mosquito. The best way to prevent Zika is to protect yourself from mosquito bites. Use insect repellent, long-sleeved clothing, bed nets, and air conditioning or screens on windows and doors. Prevent sexual transmission of Zika by using condoms or not having sex.

Treatment:

There is no specific medicine or vaccine for Zika.

HIV



Pathogen:

HIV (Human Immunodeficiency Virus)

Symptoms:

Some people have flu-like symptoms while some have no symptoms at all. The only way to know if you have HIV is to get tested.

Transmission:

Most people get HIV through anal or vaginal sex, or sharing needles, syringes, or other drug injection equipment.

HIV



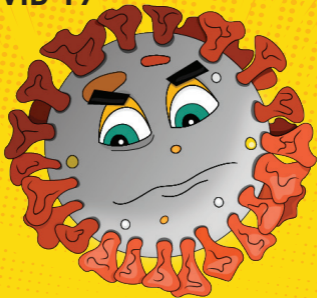
Prevention:

HIV transmission can be prevented by: abstinence (not having sex), never sharing needles, using condoms correctly every time during sex, and pre-exposure and post-exposure antiretroviral therapy medicines.

Treatment:

HIV can be controlled with treatment. Taking HIV medicine decreases the amount of HIV in the blood to a very low level – so low that a test cannot detect it. An undetectable viral load means HIV will not be transmitted through sex. It also likely reduces transmission through shared injection equipment.

COVID-19



Pathogen:
SARS-CoV-2

Symptoms:
Symptoms include fever, chills, cough, shortness of breath, head or body aches, fatigue, loss of taste or smell, sore throat, runny nose, nausea, vomiting and/or diarrhea.

COVID-19



Prevention:

The virus can spread from an infected person's mouth or nose in small liquid particles when they cough, speak or sneeze. Get vaccinated, wear masks, wash hands, and stay home if you have COVID-19.

Treatment:

Antiviral medications can help prevent severe illness and death.

Polio (Poliomyelitis)



Pathogen:
Poliovirus

Symptoms:

Polio, or poliomyelitis, is a disabling and life-threatening disease caused by the poliovirus.

The virus spreads from person to person and can infect a person's spinal cord, causing paralysis (can't move parts of the body). Most people are asymptomatic, or have no symptoms, but a smaller number of people will develop more serious symptoms like paralysis.

Polio (Poliomyelitis)



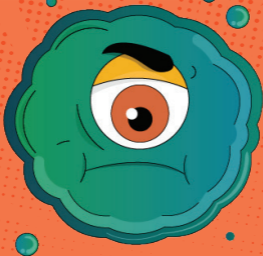
Prevention:

Polio vaccine protects children by preparing their bodies to fight the poliovirus. Almost all children (more than 99 percent) who get all the recommended doses of the inactivated polio vaccine will be protected from polio.

Treatment:

No cure or specific treatment exists for paralytic polio. Physical therapy can help with arm or leg weakness caused by polio.

Cyclosporiasis



Pathogen:

Cyclospora cayetanensis

Symptoms:

Symptoms include watery diarrhea, nausea, loss of appetite, weight loss, cramping, bloating, increased gas, and fatigue.

Cyclosporiasis



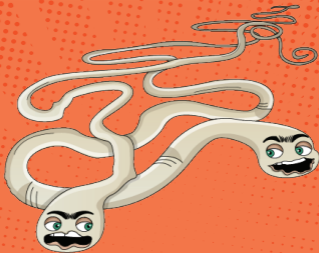
Prevention:

Avoiding food or water that may have been contaminated with feces is the best way to prevent cyclosporiasis. Wash all fruits and vegetables thoroughly under running water before eating, cutting, and cooking.

Treatment:

Specific antibiotics are needed to treat *Cyclospora* infection.

Guinea Worm Disease



Pathogen:

Dracunculus medinensis

Symptoms:

No symptoms occur for about 1 year after the initial infection. Symptoms may include a slight fever, nausea, vomiting, diarrhea, and an itchy rash before a blister forms. The blister causes burning pain. The worm protrudes through the ruptured blister.

Guinea Worm Disease



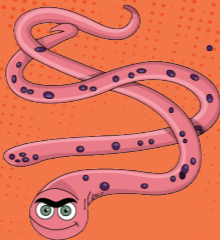
Prevention:

Humans get Guinea worm by drinking unfiltered water with *D. medinensis*-infected copepods (tiny crustaceans). The copepods become infected by feeding on *D. medinensis* larvae, released by the adult female worm when an infected blister on the human is immersed in water and bursts. Prevention includes providing access to safe water, preventing contamination of drinking water with larvae, filtering copepods from drinking water, and killing the copepods with chemicals.

Treatment:

No specific drug or vaccine treats or prevents Guinea worm disease.

Lymphatic Filariasis



Pathogen:

Wuchereria bancrofti, *Brugia malayi*, *Brugia timori*

Symptoms:

Most people are asymptomatic. Years after initial infection, symptoms may include lymphedema (fluid collection and swelling), elephantiasis (hardening and thickening of the skin) and in men, swelling of the scrotum, called hydrocele. These later symptoms are due to destruction of lymphatic vessels over time and chronic skin infections.

Lymphatic Filariasis



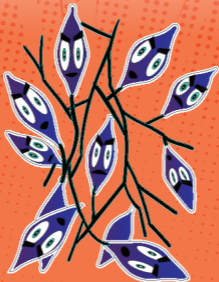
Prevention:

Avoiding mosquito bites is the best form of prevention. Use insect repellent, long-sleeved clothing, bed nets, and air conditioning or screens on windows and doors.

Treatment:

People with active infection are treated with a medication called diethylcarbamazine (DEC). Later symptoms such as lymphedema and elephantiasis are not likely to benefit from DEC treatment.

Ringworm



Pathogen:

Approximately 40 different species of fungi can cause ringworm, including *Trichophyton*, *Microsporum*, and *Epidermophyton*.

Disease:

Ringworm (tinea, dermatophytosis, athlete's foot)

Symptoms:

Symptoms may include itchy skin, ring-shaped rash, red, scaly, cracked skin, and hair loss.

Ringworm



Prevention:

Keep skin clean and dry. Change socks and underwear regularly. Don't share personal items like clothes, towels and sheets. Wash hands after playing with pets. Be sure to shower after athletics and keep all sports gear clean.

Treatment:

Treatment depends on the location on the body and seriousness. Non-prescription ("over-the-counter") or prescription antifungal medications may be needed. Do not use steroid creams.

Lyme Disease



Pathogen:

Borrelia burgdorferi and *Borrelia mayonii*

Symptoms:

Early signs and symptoms can include fever, chills, aches, fatigue, swollen lymph nodes, and erythema migrans rash that sometimes has a “bull’s-eye” appearance. Later signs and symptoms include arthritis with severe joint pain and swelling, multiple rashes, facial palsy (droop in the face), and tingling, pain, and numbness in nerves, tendons, muscles, and joints. Rarely, an irregular heart rhythm may occur.

Lyme Disease



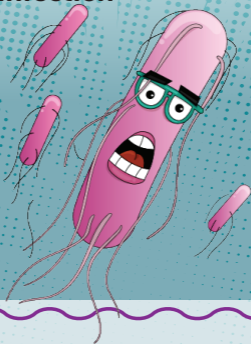
Prevention:

Lyme disease is transmitted through the bite of infected blacklegged ticks. Use insect repellent; check for ticks daily; shower soon after being outdoors; remove ticks promptly, and avoid tick habitat.

Treatment:

Early diagnosis and proper antibiotic treatment of Lyme disease is important and can help prevent more severe forms of Lyme disease.

STEC Infection



Pathogen:

Shiga toxin-producing *Escherichia coli* (STEC)

Symptoms:

Common symptoms include severe stomach cramps and diarrhea that can be bloody. Less common symptoms include fever and vomiting.

STEC Infection



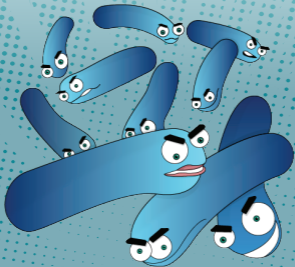
Prevention:

Wash your hands often; follow the four steps to food safety (clean, separate, cook, chill); choose safe foods and drinks when traveling abroad; don't swallow water when swimming; and drink pasteurized milk and juices.

Treatment:

Supportive care is important. Don't use antidiarrheals and antibiotics to treat STEC infection because they increase the chance of getting a life-threatening complication called hemolytic uremic syndrome (HUS).

Legionnaires' Disease



Pathogen:
Legionella

Symptoms:

Legionnaires' disease is very similar to other types of pneumonia (lung infection), with symptoms that include cough, shortness of breath, fever, muscle aches, and headaches. Lung failure and death can occur with severe disease.

Legionnaires' Disease



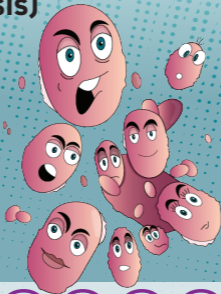
Prevention:

Legionella bacteria grow in warm water and may be found in shower heads, hot tubs, or large water heating/air systems. Keep water temperatures outside the ideal range for *Legionella* growth; prevent water stagnation; make sure disinfectant levels are right; and prevent sediment, scale, corrosion, and biofilm.

Treatment:

Legionnaires' disease requires treatment with antibiotics.

Whooping Cough (Pertussis)



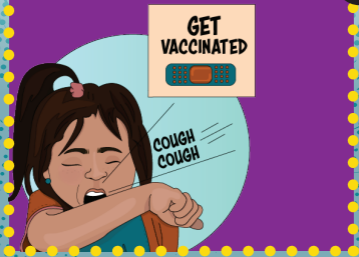
Pathogen:

Bordetella pertussis

Symptoms:

Whooping cough may begin like a common cold, but unlike a cold, the coughing can last for weeks or months. Later symptoms can include vomiting, fatigue, and rapid, violent, and uncontrolled coughing fits that cause a high-pitched “whoop” sound when people are finally able to inhale.

Whooping Cough (Pertussis)



Prevention:

Two vaccines help prevent whooping cough: DTaP and Tdap. Cover your cough or sneeze and wash your hands often.

Treatment:

Doctors generally treat whooping cough with antibiotics. You may also want to avoid irritants that trigger coughing; use a clean, cool mist humidifier; eat small meals every few hours to help prevent vomiting; and get plenty of fluids.